



Ø BEAT

COLORADO SPRINGS,
COLORADO

OCTOBER 1983

Some Hints For Working W5LFL

HOW TO CONTACT W5LFL/SPACE MOBILE

The crew at Amsat has strongly recommended that stations unfamiliar with the intricacies of satellite tracking utilize omni-directional antennas and have chosen the "turnstile," or crossed dipole array as their favorite pick for this job. Since there is no commercially available turnstile antenna marketed directly for the Amateur Service, it is one of those things you will have to "roll your own." The antenna is quite inexpensive and easy to construct. Consult the *ARRL HANDBOOK* or other antenna specialty books for information.

Dr. Garriott, AMSAT and the ARRL all request that high power amplifiers be avoided. According to AMSAT, a 10 watt output FM signal into the turnstile antenna will be more than ample to contact W5LFL. High power will add little to the chance of your making the contact, but will make it much more difficult for other stations who are trying to do the same. As is the case of not using repeaters for your contact, the same holds true of using high power. While there is no way to prevent you from using your amplifier, our knowledge of the design of the radio to be used on board the STS-9 confirms that using power will buy you nothing but a larger electric bill.

There will probably be time for only about 500 QSO's during the current allotted operating period. Because of this, don't expect Dr. Garriott to chat with you. In fact, you probably shouldn't even expect him to give you a personal "hello." Unless there is little interest in trying to contact the first HAM in space (which is doubtful), the

QSO's won't really be one on one contacts at all. Rather, as Dr. Garriott approaches a given location he wishes to make contact with, he will announce during an "odd" numbered minute who he is listening for. During the next "even" numbered minute, you choose the uplink frequency you deem best for you, and simply transmit your call-sign for the 60 second period. During this time, Dr. Garriott will scan his receive frequency and log the call-signs he hears. In the next "odd" minute he will read that list (which will also be logged on tape) and then call for the next group. This system will continue minute by minute during each hour of operation. In reality, you will never talk directly with W5LFL, but rather you will have your signal acknowledged. Don't expect signal reports, either. That would eat up too much time. Remember, access from your locality will probably be only 8 minutes maximum per day.

Though not officially set at this time, some time in late August or early September the operating frequencies will be announced. It is expected that Dr. Garriott will transmit on one frequency between 145.51 and 145.77. He will listen on any frequency between 144.91 and 145.77. While some of the uplink frequencies fall on repeater output channels ground stations are requested not to transmit through repeaters in an attempt to contact W5LFL.

There you have all the basics you need to get ready for the greatest DXpedition of all time. Most of us have everything we need, so with that in mind, we wish your "good DX," space style.

Thanks to Westlink Reports #398, 399

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ZERO BEAT is published monthly in the interest of the members of the Pikes Peak Radio Amateur Association, Inc., Colorado Springs, Colorado. Permission is given to reprint articles or excerpts provided credit is given. Deadline for submission of articles is the 21st of the month. Classifieds accepted anytime.

The Pikes Peak Radio Amateur Association meets on the second Wednesday of every month at the Palmer House Motel, I-25 and Fillmore, at 7:30 p.m. All amateurs and interested parties are invited to attend.

Editor: Don Lohse KBØKQ, 1410 E. LaSalle, Colorado Springs, CO 80907 635-7469

SEPTEMBER MEETING MINUTES

The regular meeting of the Pikes Peak Radio Amateur Association was called to order by Dave, NØDV, September 14, 1983 at 7:30 p.m. Fifty-six members and guests were present. After approval of the minutes, Les, KCØNC, reported that the treasury had a balance of \$2632.94 after expenses of \$85.80. He also indicated the 1984 Swapfest date is set for April 15th at the Polka Club.

Don, KBØKQ, indicated he will resign as editor of Zero Beat in January. A new editor is needed. Interested persons should contact a board member.

Some discussion centered around relations between the PPRAA and the Red Cross. The situation appears to be improving and members of the Red Cross have indicated they would like to speak to the club about possible coordination between the two organizations. An upcoming meeting will be set aside for that purpose.

Bruce, KXØE, presented information on the reforming of the District 14 ARES system covering El Paso and Teller Counties. Applications are available from him. The ARES net meets Wednesday evenings at 7:00 p.m. On club meeting nights it is called at 6:45 for early check-ins of people going to the club meeting. The frequency is 146.52 MHz.

PPRAA attendees were treated to an extremely interesting program after the business meeting. Karl Smith — ARRL V.P.; Les Carey — Rocky Mtn. Division Director; and Marshall Quait — lawyer were all present to discuss current amateur radio issues and answer questions from the membership. The discussion was quite interesting and included issues from the no-code license proposal to the KAL airliner downing.

The club also extended a warm welcome to VU2MY and his wife who were touring the United States and studying various amateur emergency systems as they prepare to implement such a system in India.

After the raffle, the meeting adjourned at 10:40 p.m. The next meeting will be Oct. 12th at the Palmer House.

Respectfully Submitted,
Mark NØEPF

MEETING NOTICE

The October meeting of the Pikes Peak Radio Amateur Association will be held on October 12 at 7:30 p.m. at the **Palmer House Motel on N. Chestnut Street (just north of I-25 and Fillmore.)** The program will be the election of officers of the club for the coming year. This is one of the most important meetings of the year, as those people elected will be charting the course of the club in the future, and your participation in the selection is very important.

All members and other interested persons are encouraged to attend.

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UNIVERSITY SCIENTIST DRILLS SMALLEST HOLE

URBANA, ILL. (A.P. by R.L. Zimmer). A University of Illinois scientist, analyzing a tiny ceramic conductor with an electron microscope, accidentally drilled what she believes is the smallest permanent hole.

The hole is 20 angstroms wide — so small that 100 trillion of them could be drilled in a square inch, said research metallurgist Margaret Mochel. That is allowing an 80-angstrom space between holes. She also was able to cut a 20-angstrom-wide slot in the material — sodium beta-alumina. The discovery could be used in the electronics industry to make smaller computer chips, she said.

The material was brought to UI by an Oxford Univ. professor, who wanted to use the sophisticated electron microscope to analyze the sample. "When we put the probe on it it left a very small hole behind," said Mrs. Mochel. "It was quite a dramatic thing. It just took a couple of seconds." Most material into which tiny holes are drilled breaks down when it is removed from the electron microscope, she said. But, the hole in the sodium beta-alumina was permanent.

"It's like a long tunnel through the material, and the walls are very rigid," she said. The depth of the hole was about 100 times the diameter, which did not vary from end to end. "It appears that the strong, electron beam is evaporating away the material," she said. "We need to examine why that is happening." The technique could be useful in developing new generations of integrated circuit computer chips, said Mrs. Mochel.

Chips are made by etching tiny lines in their surfaces, then filling them with a material that conducts electricity, producing a miniature version of a printed circuit board. "You want these chips to be as small as possible and still work," said Mrs. Mochel. She said

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Dick Kohlhaas, W5UDM

researchers now will determine how well electricity is conducted through the metal-filled slots cut by the electron microscope. In addition, they will try to make these tiny holes and slots in materials other than the sodium beta-alumina, she said. Mrs. Mochel said it takes about 20 of the best computer chips now available to record the information in a 100,000 word book. With the electron beam technique, she said it might be possible to make one chip so small that it would store information from 1,000 books.

Thanks to the Sterling Daily Gazette

W5LFL FREQUENCIES

The complete list of frequencies to be used by Owen Garriott W5LFL, on the "ham in space" portion of the STS-9 mission has been released. The downlink (W5LFL to earth) freqs are 144.55 MHz primary, with 145.25, 145.53 and 145.57 as alternates. The uplink band begins at 144.65 on 25 KHz centers through 144.85 MHz (the European standard). More uplink at 144.91 on 20 KHz centers (region 2 standard) and continue through 145.09. Two other frequencies to monitor are 145.35 MHz and 145.45 MHz.

It is interesting to note that the specifications on the radio that Dr. Garriott will use call for it to receive only from 144.91 to 145.49, placing some of the uplink channels out of its intended bandwidth.

TNX to Westlink Report

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OUTPUT POWER MEASUREMENT

The FCC has redefined transmitting power measurement in the Amateur Radio Service in terms of **OUTPUT** power, rather than **INPUT** power limits we have been used to.

The output power is defined in terms of PEP (peak envelope power). The new limit, in general is set at 1,500 watts PEP **OUTPUT**, replacing the former limit of 1,000 watts DC input power. For the Novice bands the limit is 200 watts PEP output.

For the AM mode (double sideband with carrier) the old input power definition may be used until 1990, after which they, too, will use the new definition.

While you have to comply with the rules regarding the power limit for the power you use, you don't have to have any specific equipment on hand to measure the PEP output.

For most of us this change is not going to make any difference in our operations. Since we are well within the power limits we will just go on as before.

This is effective as of August 29, 1983. For the next 7 years, AM will be permitted to be measured by the old method of "Input Power".

ADDITIONAL FREQUENCIES FOR RACES

The Radio Amateur Civil Emergency Service would be authorized to use additional frequencies at such time the President's war emergency powers have been invoked, if the FCC enacts new rules proposed in Docket B3-524.

900 MHz HAM BAND CONTROL

Joe Reiser (W1OR) has received an authorization from the FCC's Office of Science and Technology for "a new experimental development station to operate on 902 to 908 MHz to develop equipment for use by amateurs on new frequencies allocated in WARC 79."

SEPTEMBER BOARD MINUTES

The Board of the Pikes Peak Radio Amateur Association met Sept. 19, 1983 at the home of Charlie, KCØTI. Present were Charlie, Mark NØEPF, Bud NØDDF, Dave NØDV, Jake NØCYR and Tom ADØO.

A need is seen for having one location for club equipment rather than spreading it all over town. The Board will initiate some contacts and report.

Upcoming programs are scheduled as follows: October - elections; November - Red Cross and Amateur Radio; December - homebrew night; January - movie night.

Mark reported that the club received a request of membership for the Special Service Club. It will be sent to ARRL and the application will then be processed. The club also received information from the District on a need for a local public information officer who would report local happenings to the District.

Hammy still needs to be located. Does anyone have information?

The club will need a new Zero Beat editor in January. Interested persons should contact a board member.

Novice classes began Sept. 20th with twenty prospective hams teaching. Mark began teaching duties the 17th. Joe and Charlie are also helping to teach. Harley and Larry are alternating on the code portion. Several club members have been in attendance and have been welcomed.

It is time to begin thinking of where to have the Christmas Party. Several locations were suggested and other suggestions should be sent to a board member.

The Board serves as the nominating committee and has come up with the following recommended slate: President - Charlie, KCØTI; Vice President - Al, NØCMW; Secretary - Mark, NØEPF; Treasurer - Les, KCØNC; Board members - Joe, NØENM and Jim, KR7J.

Board members will explore the possibility of a small demo at Chapel Hills Mall. It was the feeling of the Board that rather than asking for volunteers they would make the demo a Board project.

There being no further business before the Board, the meeting was adjourned at 9:30 p.m. Next meeting place will be decided after elections; the date will be October 17th.

Respectfully submitted,
Mark NØEPF

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